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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/538,469	03/29/2000	Kouki Ogawa	Q58486	6688

7590 01/21/2003
Sughrue Mion Zinn MacPeak & Seas PLLC
2100 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER

HA, NATHAN W

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 01/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/538,469

Applicant(s)

OGAWA ET AL.

Examiner

Nathan W. Ha

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1-13 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Zavrel, Jr. et al. (US. 6,218,729 B1, hereinafter, Zavrel, previously cited.)

In regard to claims 1-2, 4, 9-10, in figs. 3 and 8-9, Zavrel discloses a printed wiring substrate 822 having a planar surface and a built-in capacitor 804 on which an IC chip 820 is mounted, the printed substrate comprising a capacitor cavity selected from the group consisting of a closed-bottom cavity 850 and a through hole cavity 856, see fig. 8. The capacitor comprises

a pair of electrodes 860, 862; and

a plurality of capacitor terminals 810, 812 projecting beyond the surface of the printed substrate, wherein the respective capacitor terminals are electrically connected to one or the other paired electrodes, figs. 8-9;

the printed wiring substrate 822 comprises a plurality of substrate terminals, for example, 844, 840;

Art Unit: 2814

the IC chip 820 comprises a plurality of connection-to-capacitor terminals 828 and plurality of connection-to-substrate terminals, also labeled as 828, on the right side of fig. 8;

the plurality of capacitor terminals of the capacitor are respectively flip-chip-bonded to a plurality of connection-to-capacitor terminals of the IC chip, see fig. 8; and

the plurality of the substrate terminals of the printed wiring substrate are respectively flip-chip-bonded to a plurality of connection-to-substrate terminals of the IC chip. The region directly below the die where the capacitor formed is considered as a cavity therein. This capacitor, clearly, is constructed in an accommodating cavity embedded in the substrate, see fig. 8.

In regard to claim 3, the IC-chip-carrying printed wiring substrate is a CSP adapted for mounting an IC chip, see col. 2, first paragraph, and fig. 8.

In regard to claim 5, see col. 3, first paragraph, see also fig. 8.

In regard to claim 6, see above discussion of claim 1; further see fig. 8, the plurality of capacitor terminals and the plurality of substrate terminals are substantially coplanar.

In regard to claims 7-8, see fig. 9.

In regard to claims 11-12, see fig. 9.

In regard to claim 13, in fig. 8, the balls 830 are used for connecting to another circuit substrate, inherently.

Art Unit: 2814

In regard to claims 16-18, Zavrel further discloses the printed wiring substrate comprises a core substrate made of resin and a capacitor accommodation cavity for the capacitor; and

the capacitor comprises a dielectric layer made of ceramic and electrodes arranged in alternative layers, see figs. 3 and 8 and col. 5, lines 30-45, and the abstract.

Response to Arguments

4. Applicant's arguments filed 3/18/02 have been fully considered but they are not persuasive. For instance, Applicants contend that Zavrel et al., '729, does not disclose a cavity that formed by vias. According to fig. 8 and discussions above, Zavrel et al. in fact discloses a accommodation cavity defined by vias 850, 856, and the bottom layer 812; this cavity is formed for the same purpose as claimed in the instant application, containing a capacitor in the substrate. Therefore, the cavity is inherently defined therein.

Conclusion

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and 308-3432 for After Final communications.

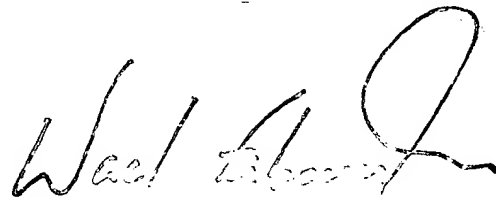
Application/Control Number: 09/538,469

Page 5

Art Unit: 2814

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha
January 14, 2003

A handwritten signature in black ink, appearing to read "Nathan Ha", written in a cursive style.

SUPERIOR TECHNOLOGY CENTER 2800